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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/589,547

08/16/2006

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EXAMINER

MOON, SEOKYUN

ART UNIT

PAPER NUMBER

2629

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/589,547	Applicant(s) CLARKE ET AL.	
	Examiner SEOKYUN MOON	Art Unit 2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,7-9,13 and 15-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,7-9,13, and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Remarks

1. In the previous Office action, the claim limitations of the previously presented claims 4, 6, 14, and 15 were indicated as being allowable. However, Examiner respectfully submits that upon a further review and consideration of the limitations, the claim limitations are not allowable. Accordingly, this Office action is made Non-Final.

Claim Objections

2. **Claims 1, 13, 16, and 17** are objected to because of minor informalities.

Examiner respectfully suggests the Applicants to amend the claims as follows.

Regarding claims 1, 16, and 17, please insert commas right after the limitation, “a discrete drop of liquid” in line 2 and the limitation, "porous layer" in line 5.

Regarding claim 13, the claim discloses, "means for connection of each element to a circuit". Please amend the claim limitation as follows: "means for connecting each element to a circuit".

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. **Claims 2, 7-9, and 13** recite the limitation "An element" in line 1 [claims 2 and 7-9] and “one element” in lines 2-3 [claim 13]. There is insufficient antecedent basis for these limitations

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in the claim. It appears that the Applicants have attempted to claim the display element claimed in claim 1 on which claims 2 and 7-9 depend, in the claims. Accordingly, Examiner respectfully suggests the Applicants to replace the claim limitations with the limitation “the display element”.

Claim 15 recites the limitation "A device as claimed in claim 17" in line 1. However, claim 17 on which the claim depend does not disclose any device. Based on the limitation of claim 13 which is similar to the claim, Examiner respectfully suggests the Applicant to amend replace the claim limitation with the limitation, "A device comprising the display element as claimed in claim 17".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

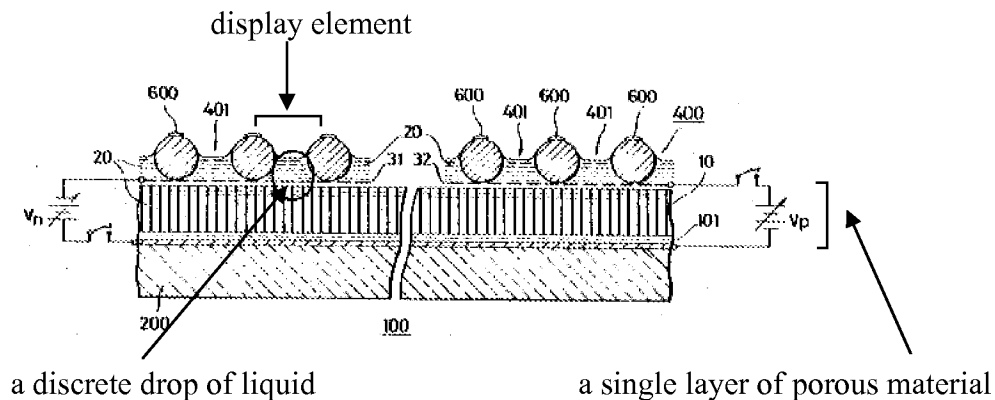
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 1, 2, 9, 13, and 15-17** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,488,785 by Kohashi in view of U.S. Patent No. 6,525,866 by Lin et al. (herein after “Lin”) and U.S. Patent No. 7,119,161 by Lawandy et al. (herein after “Lawandy”).

As to **claim 1**, Kohashi teaches a display element [drawing 1 provided below, which is same as figure 1 of Kohashi] comprising a single layer of porous material, a discrete drop of liquid and means (“ V_n ” or “ V_p ”) for connecting a voltage supply to the layer, whereby an application of a voltage between the liquid and the porous layer, the drop of liquid moves into the layer [drawing 2c and col. 3 line 65 – col. 4 line 5], the drop moving back out of the layer

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upon removal of the voltage [drawing 2a and col. 3 lines 28-35], the movement of the liquid effecting an optical change when viewed from above the porous layer.



Drawing 1

Kohashi does not teach the layer comprising a plurality of conductive particles covered with a lyophobic and electrically insulating covering.

However, Lin teaches the concept of including a plurality of conductive particles [col. 2 lines 34-38] in a layer of a display [col. 2 lines 26-38].

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the plurality of conductive particles of Lin in the layer of Kohashi, in order to allow the layer of Kohashi to display different colors.

Kohashi as modified by Lin does not expressly teach that the plurality of conductive particles is covered with a lyophobic and electrically insulating covering.

However, Examiner takes Official Notice that it is well known in the art to cover particles with a polymer to prevent the particles from coagulation.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display element of Kohashi as modified by Lin to cover each of the particles with a polymer, in order to prevent the particles from coagulation.

Kohashi as modified by Lin does not expressly teach that the conductive particles are organic or inorganic particles covered with a conductive shell.

However, Lawandy teaches the concept of forming a conductive particle by covering organic or inorganic particle with a conductive shell [col. 5 lines 52-55] (Note that any material is either organic or inorganic.).

It would have been obvious to one of ordinary skill in the art at the time of the invention to form each of the conductive particles of Kohashi as modified by Lin by covering organic or inorganic particle with a conductive shell, as taught by Lawandy, in order to reduce the effect of an electric field on the particles.

Kohashi as modified by Lin and Lawandy inherently teaches that the thickness of the conductive shell is chosen to create a colored particle because the existence of the conductive shell would provide a different light reflectivity on the particle and thus would create a different gradation level on the particle.

As to **claim 2**, Kohashi as modified above teaches that the conductive particles are metallic [Lin: col. 2 lines 34-38].

As to **claim 9**, Kohashi as modified above teaches that the porous layer has a pore size greater than 30 nm and less than 2 μm [Kohashi: col. 2 lines 30-33].

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As to **claim 13**, Kohashi as modified above teaches that a device including the display element includes means for connection (the switching unit shown on figure 1 of Kohashi) of each element to a circuit to create a matrix display [Kohashi: fig. 1].

As to **claim 15**, Kohashi as modified above teaches a device including the display element, wherein the display element is environmentally sealed [drawing 1 provided on page 4 of this Office action].

As to **claim 16**, all of the claim limitation has already been discussed with respect to the rejection of claim 1 except for that the insulating covering is a polymer, a polyelectrolyte, a fluoropolymer, a self assembled monolayer or an inorganic shell.

Kohashi as modified above teaches that the insulating covering is a polymer, a polyelectrolyte, a fluoropolymer, a self assembled monolayer or an inorganic shell, as discussed with respect to the rejection of claim 1 (Note that the claim limitation related to the SAM is not necessarily covered by the cited prior arts because the insulating covering is not necessarily to be the SAM.).

As to **claim 17**, all of the claim limitation has already been discussed with respect to the rejection of claim 1 except for that the materials of the porous layer is coated onto a support material.

Kohashi as modified above teaches that the materials of the porous layer [drawing 1 provided on page 4 of this Office action] is coated onto a support material (Note that, in the apparatus of Kohashi as modified above, the porous layer includes a plurality of particles each of which is formed of organic or inorganic particle covered by a conductive shell. Examiner

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construed the conductive shell as the claimed materials and the particle as the claimed support material.).

7. **Claims 7 and 8** are rejected under 35 U.S.C. 103(a) as being unpatentable over Kohashi, Lin, and Lawandy as applied to claims 1, 2, 9, and 13 above, and further in view of Steckl et al. (U.S. Patent No. 7,123,796, herein after “Steckl”).

As to **claims 7 and 8**, Kohashi as modified by Lin and Lawandy does not expressly teach that the drop of liquid is encapsulated by a flexible and a transparent membrane.

However, Steckl teaches the concept of encapsulating a light element (“*photoluminescent layer 24*”) [figs. 1 and 2] of a display by a flexible and transparent membrane (“*transparent scattering layer 26*”) [figs. 1 and 2].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the display element of Kohashi as modified by Lin and Lawandy to encapsulate the drop of the liquid by a flexible and transparent membrane, as taught by Steckl, in order to prevent the drop of the liquid being exposed to air.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SEOKYUN MOON whose telephone number is (571)272-5552. The examiner can normally be reached on 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner’s supervisor, Sumati Lefkowitz can be reached on 572-272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

November 19, 2010

/Seokyun Moon/

Examiner, Art Unit 2629